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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,658	04/15/2004	Xiaoli Fu	13854-067001	9574

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EXAMINER

CONNELLY CUSHWA, MICHELLE R

ART UNIT PAPER NUMBER

2874

DATE MAILED: 08/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/826,658

Applicant(s)

FU ET AL.

Examiner

Michelle R. Connelly-Cushwa

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 and 21-29 is/are pending in the application.
- 4a) Of the above claim(s) 12-15 and 29 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16-19 and 21-28 is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-19 and 21-29 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 26, 2005 has been entered.

Response to Amendment

Applicant's Amendment filed July 26, 2005 has been fully considered and entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-7, 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Colbourne et al. (US 6,804,467 B2).

Regarding claim 1; Figure 6 of Colbourne et al. discloses a dispersion compensation module comprising:

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- a polarization collimator (101 and 121 form the polarization collimator; see Figure 5a and column 9, lines 6-40);
- a polarization beam splitter (102) coupled to the polarization collimator and having a first port, a second port, and a third port, the polarization beam splitter (102) operable to receive a light beam (111) at the first port, having a single polarization, from the polarization collimator, such that substantially the entire light beam is directed from the first port to the second port;
- a first reflection etalon (109) optically coupled to the second port of the polarization beam splitter (102); and
- a second reflection etalon (1110) optically coupled to the third port of the polarization beam splitter,
- where the polarization beam splitter (102) is positioned between the first reflection etalon (109) and the second reflection etalon (1110) such that a light beam (112) from the first reflection etalon passes, without reflection, through the polarization beam splitter to the second reflection etalon.

Regarding claim 2; the dispersion compensation module is operable to apply a group delay profile to at least one optical signal.

Regarding claim 3; the polarizer (102) is operable to redirect a first optical signal having a first polarization input at the first port to be output from the second port and to

redirect a second optical signal having a second polarization perpendicular to the first polarization at the second port to be output at the third port.

Regarding claim 4; the first reflection etalon (109) is operable to apply a group delay profile to the first optical signal output from the second port.

Regarding claim 5; the dispersion compensation module disclosed in Figure 6 of Colbourne et al. further comprises a quarter-waveplate (103) positioned between the first reflection etalon (109) and the second port of the polarization beam splitter (102), wherein the quarter-waveplate (103) is operable to rotate a polarization of a first optical signal output from the second port by 45 degrees and allow the first optical signal to propagate toward the first reflection etalon (109), the quarter-waveplate (103) for rotating a polarization of an optical signal reflected back from the first reflection etalon (109) by a further 45 degrees into a second optical signal having a second polarization perpendicular to the first polarization and allowing the second optical signal to be input at the second port of the polarizer (102; see column 9, lines 6-40).

Regarding claim 6; the polarization collimator (101 and 102 form the single polarization collimator) is coupled to the polarizer quarter-waveplate assembly.

Regarding claims 7 and 9; Colbourne et al. discloses that the device may comprise a tuner coupled to the first reflection etalon, operable to adjust a resonant frequency of the reflection etalon, wherein the tuner is a heater (see column 8, lines 58-62).

Regarding claim 11; Colbourne et al. discloses a dispersion compensation module in Figure 6 for applying a desired group delay profile to an input optical signal

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(111), and further discloses that the a beam displacer (102) in Figure 6 may be replaced with a block of polarization beam splitters (302, shown in Figure 7; see column 9, lines 60-63), thereby discloses a dispersion compensation module comprising:

- a plurality of integrally formed etalon assemblies, each etalon assembly for applying a group delay profile to an optical signal (111), each etalon assembly arranged so that the optical signal passes at least once therethrough, each etalon assembly comprising:
 - o a polarization beam splitter (one of the polarizing beam splitters, PBS, in the block of polarizing beam splitters, 302) having a first port, a second port, and a third port operable to reflect an optical signal having a first polarization, input at the first port to be output from the second port and operable to direct an optical signal having a second polarization perpendicular to the first polarization, input at the second port to be output at the third port (the third port of the polarizer being at a side of the polarization beam splitter that is adjoined to another polarization beam splitter in the integrally formed block of polarization beam splitters, 302);
 - o a first reflection etalon (109) for application of a group delay profile to the optical signal output from the second port; and
 - o a first quarter-waveplate (103) positioned between the first reflection etalon and second portion of the polarization beam

- splitter, for rotating a polarization of the optical signal output from the second port by 45 degrees and allowing the optical signal to propagate toward the first reflection etalon, the first quarter-waveplate operable to rotate a polarization of the optical signal reflected back from the first reflection etalon by a further 45 degrees such that the optical signal has a second polarization perpendicular to the first polarization and allowing the optical signal to enter the second port of the polarization beam splitter and pass directly through the polarization beam splitter to the third port;
- o a second reflection etalon (1110) positioned such that the polarization beam splitter (302) is located between the first reflection etalon and the second reflection etalon and operable to apply a group delay profile to the optical signal output from the third port; and
 - o a second quarter-wave plate (1071) positioned between the second reflection etalon and the third port of the polarization beam splitter; and
- a polarization collimator (101 and 121 form the polarization collimator) coupled to the first port of a first polarization beam splitter of the plurality of etalon assemblies and operable to provide the optical signal

to the first port of the polarization beam splitter having a single polarization.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Colbourne et al. (US 6,804,467 B2).

Regarding claim 8; Colbourne et al. discloses all of the limitations of claim 8 as applied above, except for specifically stating that the dispersion compensation device has a controller coupled to the or each tuner and operable to control the tuner.

Colbourne et al. discloses that the etalon may be tuned with a heating element adjacent the etalon. Heating elements necessarily require a controller to at least turn the element on and off, as well as set a level of heat, to provide tunability. Therefore, one of ordinary skill in the art would have found it obvious to incorporate a controller in the invention of Colbourne et al. to operate the or each heating element for tuning the or each etalon device.

Regarding claim 10; Colbourne et al. discloses all of the limitations of claim 10 as applied above, except for specifically stating that the tuner is one or more electrodes. Colbourne et al. discloses that the tuner may be a heating element adjacent the etalon. Heating elements are commonly formed from electrodes in the art. Therefore, one of

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ordinary skill in the art would have found it obvious to incorporate an electrode in the invention of Colbourne et al., tuner, since electrodes are heating elements.

Allowable Subject Matter

Claims 16-19 and 21-28 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The prior art cited on form PTO-892, which is attached to a prior Office action, is the most relevant prior art known, however, the invention of claims 16-19 and 21-28 distinguishes over the prior art of record because none of the references either alone or in combination disclose or render obvious a dispersion compensation module as defined in claim 16, wherein the first and second polarizers are positioned between the first and second etalons such that an optical signal reflected from the first etalon passes, ***without reflection***, through the first and second polarizers to the second etalon. Claims 17-19 and 21-28 depend from claim 16.

Hence, there is no reason or motivation for one of ordinary skill in the art to use the prior art of record to make the invention of claim 16.

Response to Arguments

Applicant's arguments filed July 26, 2005 have been fully considered but they are not persuasive.

Regarding prior art rejections to claims 1-11 over Colbourne et al.; Applicant states that claim 1 is directed toward a dispersion compensation module that includes a polarization beam splitter between a first reflection etalon and a second reflection etalon

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such that a light beam from the first reflection etalon passes, without reflection, through the polarization beam splitter to the second reflection etalon.

Figure 6 of Colbourne et al. discloses a polarization beam splitter (102) between a first reflection etalon (109) and a second reflection etalon (1110) such that a light beam (112) from the first reflection etalon passes, without reflection, through the polarization beam splitter to the second reflection etalon.

Applicants arguments with respect to Figures 5 and 7 of Colbourne et al. have been considered, but are moot in view of the new grounds of rejection over Figure 6 of Colbourne et al.

Additionally, claim 11 requires that an optical signal, entering at the second port of the polarization beam splitter, passes directly through the polarization beam splitter to the third port. Passing "directly through" is not the same as passing "without reflection". Directly through simply requires that there are no intervening elements between the second port and the third port of the beam splitter, except for the beam splitter.

Regarding prior art rejections to claims 16-19 and 21-28 over Colbourne et al.; the rejections have been withdrawn in view of the Amendments to claim 16 and Applicant's Arguments.

Conclusion

Any inquiry concerning the merits of this communication should be directed to Examiner Michelle R. Connelly-Cushwa at telephone number (571) 272-2345. The examiner can normally be reached 9:00 AM to 7:00 PM, Monday-Thursday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B. Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general or clerical nature should be directed to the Technology Center 2800 receptionist at telephone number (571) 272-1562.

Michelle R. Connelly-Cushwa
Michelle R. Connelly-Cushwa
Patent Examiner
August 4, 2005